

## **Amendments to the Claims**

The following listing of claims will replace all prior versions, and listings, of claims in the application.

### **Listing of Claims**

1           1(Original). A system, comprising:  
2           a graph-decoder based speech recognition mechanism for recognizing a word  
3           sequence, from input speech data, based on a language model using a graph decoder;  
4           and  
5           a keyword based speech recognition mechanism for recognizing, when the  
6           graph-decoder based speech recognition mechanism fails, the word sequence based  
7           on at least one keyword detected from the input speech data.

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1           2(Original). The system according to claim 1, wherein the graph decoder based  
2           speech recognition mechanism comprises:  
3           a graph decoder for recognizing the word sequence from the input speech data  
4           based on at least one acoustic feature to generate a recognition result, the recognizing  
5           being performed according to at least one acoustic model and a language model; and  
6           a recognition acceptance mechanism for determining whether to accept the  
7           recognition result generated by the graph decoder based speech recognition  
8           mechanism or to activate, when the recognition result from the graph decoder based

9 recognition mechanism is not accepted, the keyword based speech recognition  
10 mechanism.

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1 3(Original). The system according to claim 2, further comprising an acoustic  
2 feature extractor to extract the at least one acoustic feature from the input speech data.

1  
1 4(Original). The system according to claim 2, wherein the keyword based speech  
2 recognition mechanism comprises:  
3 a keyword spotting mechanism, activated by the recognition acceptance  
4 mechanism, for detecting, using the at least one acoustic models, the at least one  
5 keyword from the input speech data based on a keyword list; and  
6 a keyword based recognition mechanism for recognizing the word sequence  
7 using the at least one keyword, detected by the keyword spotting mechanism, based on  
8 the language model.

1  
1 5(Original). A keyword based speech recognition mechanism, comprising:  
2 a keyword spotting mechanism for detecting, using at least one acoustic models,  
3 at least one keyword from input speech data based on a keyword list; and  
4 a keyword based recognition mechanism for recognizing a word sequence using  
5 the at least one keyword, detected by the keyword spotting mechanism, based on a  
6 language model.

1  
1 6(Original). The system according to claim 5, further comprising:

an index mechanism for establishing indices to word sequences that are allowed by the language model based on the keyword list, the indices being used by the keyword based recognition mechanism to recognize the word sequence.

7(Original). A method, comprising:  
recognizing, by a graph decoder, a word sequence from input speech data based on at least one acoustic features, the recognizing being performed using at least one acoustic model and a language model;  
determining, by a recognition acceptance mechanism, whether to accept the word sequence or to activate a keyword based speech recognition mechanism; and  
performing, by a keyword based speech recognition mechanism when it is activated, keyword based speech recognition from the input speech data.

8(Original). The method according to claim 7, wherein the performing comprises:  
detecting, by a keyword spotting mechanism, at least one keyword, according to a keyword list, from the input speech data based on the at least one acoustic model;  
and  
recognizing, by a keyword based recognition mechanism, the word sequence using the at least one keyword, detected by the detecting, based on the language model.

9(Original). The method according to claim 7, further comprising:  
receiving the input speech data; and

3 extracting, by an acoustic feature extractor, the at least one acoustic feature from  
4 the input speech data.

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1 10(Original). A method for keyword based speech recognition, comprising:  
2 detecting, by a keyword spotting mechanism, at least one keyword, according to  
3 a keyword list, from input speech data based on at least one acoustic model; and  
4 recognizing, by a keyword based recognition mechanism, a word sequence using  
5 the at least one keyword, detected by the detecting, based on a language model.

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1 11(Original). The method according to claim 10, further comprising:  
2 deriving at least one word sequence from the language model to generate a  
3 language associated with the language model; and  
4 establishing indices to the at least one word sequence based on each word in the  
5 keyword list prior to the detecting.

1  
1 12(Original). The method according to claim 10, wherein the recognizing  
2 comprises:  
3 identifying zero or more candidate word sequences, through the indices between  
4 each keyword in the keyword list to the at least one word sequence, that contain at least  
5 some of the at least one keyword; and  
6 determining the word sequence from the zero or more candidate word  
7 sequences that match the at least one keyword.

13(Original). A computer-readable medium encoded with a program, the program, when executed, causing:

recognizing, by a graph decoder, a word sequence from input speech data based on at least one acoustic features, the recognizing being performed using at least one acoustic model and a language model;

determining, by a recognition acceptance mechanism, whether to accept the word sequence or to activate a keyword based speech recognition mechanism; and

performing, by a keyword based speech recognition mechanism when it is activated, keyword based speech recognition from the input speech data.

14(Currently amended). The medium according to claim 13, wherein the performing comprises:

detecting, by a keyword spotting mechanism, at least one keyword, according to a keyword list, from the input speech data based on the at least one acoustic model;

and

recognizing, by a keyword based recognition mechanism, the word sequence using the at least one keyword, detected by the detecting, based on the ~~constrained~~ constrained language model.

15(Original). The medium according to claim 13, the program, when executed, further causing:

receiving the input speech data; and

extracting, by an acoustic feature extractor, the at least one acoustic feature from the input speech data.

16(Currently amended). A computer-readable medium encoded with a program for keyword based speech recognition, the program, when executed, causing:

detecting, by a keyword spotting mechanism, at least one keyword, according to a keyword list, from input speech data based on at least one acoustic model; and

recognizing, by a keyword based recognition mechanism, a word sequence using the at least one keyword, detected by the detecting, based on a ~~constrained~~ constrained language model.

17(Original). The medium according to claim 16, the program, when executed, further causing:

deriving at least one word sequence from the language model to generate a language associated with the language model; and

establishing indices to the at least one word sequence based on each word in the keyword list prior to the detecting.

18(Original). The medium according to claim 17, wherein the recognizing comprises:

identifying zero or more candidate word sequences, through the indices between each keyword in the keyword list to the at least one word sequence, that contain at least some of the at least one keyword; and

- 6 determining the word sequence from the zero or more candidate word
- 7 sequences that match the at least one keyword.